

UNCD® Seals — Changing the Face of Seals



The hardness, low friction and chemical inertness of natural diamond are now available in mechanical seals for fluid pumps. The patented and award winning UNCD® from Advanced Diamond Technologies (ADT) is a phase-pure (sp³) diamond-bonded carbon. It is so smooth that it can be run directly against conventional blister resistant carbon and silicon carbide counterfaces making UNCD



Seals suitable and cost effective for a wide variety of pumping applications. It also performs exceptionally well in hard on hard face combinations.

Benefits of UNCD® Seals

- Dramatically increased mean-time-to-repair
- Reduced maintenance costs
- Dry running capability for hard faces
- Ideal for thermally sensitive media
- Improved seal reliability and safety
- Economical

2006

FROST & SULLIVAN

Diamond Thin Films
Product Innovation of the Year Award

Winner of the 2006 Frost & Sullivan Product Innovation of the Year award for diamond thin films.

Selected by R&D Magazine in 2008 as "one of the 100 Most Technologically Significant New Products of the Year."



UNCD[®] Seals—Changing the Face of Seals

UNCD Seals Solutions

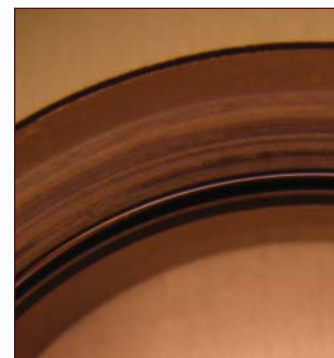


Enables Dry Running of Hard Faces

UNCD provides a solution for applications requiring a hard-on-hard seal face combination that risks dry run damage. UNCD Faces paired with silicon carbide have shown tolerance for dry running in conventional ANSI pumps, whereas in the same environment conventional hard pairs generated so much heat that seal failure quickly occurred. Test results show a 75 percent reduction in friction when running UNCD against SiC as compared to running SiC against SiC. The extremely low friction of UNCD running against SiC results in lower heat at the seal face than a SiC face paired with carbon which is the current industry standard for low friction. These features make UNCD paired with SiC an ideal material combination for applications that intermittently may run dry.

Suitable for High Wear Applications

UNCD Faces provide improved wear resistance over SiC and enable seals to last longer in applications involving abrasive slurries. Where the operating conditions result in poor “face lubrication”, UNCD provides increased durability due to UNCD’s ability to resist wear while retaining the designed surface properties. This benefit has been demonstrated in ANSI pumps running water at 250°F and 100 psig where accelerated wear tests with extremely poor lubrication resulted in negligible wear on the UNCD face while a control SiC face wore heavily and resulted in severe leakage.



Suitable for Temperature Sensitive Media

UNCD offers exceptionally low friction that results in a cooler face temperature, is extremely resistant to corrosion and has demonstrated bio-compatibility that makes it well suited for critical food, pharmaceutical, biological and low-flash point chemical applications where media contamination and the reduction of friction generated reactions at the seal face are critical.

Offering

UNCD Faces are commercially available from a major seal manufacturer in cartridge type seals for common ANSI pumps. Additionally, UNCD component seals are available from ADT for customer trial evaluation purposes. Seal ring faces, known as UNCD[®] Faces, are offered to OEMs and mechanical seal manufacturers and can be supplied in a wide variety of types and sizes to meet customer requirements. ADT offers technical expertise and testing capabilities to help customers quickly incorporate UNCD into their seal products. For more information about UNCD Seals, please contact us.

Advanced Diamond Technologies, Inc.

429 B Weber Rd, #286

Romeoville, IL 60446

T: 815.293.0900

E: info@thindiamond.com

www.thindiamond.com

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This product is protected by one or more of the
following U.S. and foreign patents: 5,989,511;
6,592,839; 7,128,889; 5,849,079; 5,772,760. Addi-
tional patents pending.

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